Amendments to the Claims

Claim 1 **(Currently Amended)** A polygon rendering device comprising:

a polygon division section for dividing ~~generating~~, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of ~~a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing~~ the polygon; and

a partial polygon rendering section for performing a rendering process and, ~~and based on the partial polygon data generated by said polygon division section,~~ without requiring further division of any of the plurality of partial polygons, generating partial image data which represents an image of the at least one partial polygon from partial polygon data, wherein

~~each of the partial polygons includes a plurality of triangles which respectively include a vertex of the polygon, and~~

~~each of the triangles shares at least one edge with at least one other triangle included in the same partial polygon~~

a plurality of partial image data represents an image of the polygon when combined.

Claim 2 **(Previously Presented)** The polygon rendering device according to claim 1, wherein

the polygon data includes a set of coordinates for specifying the polygon,

the polygon rendering device further comprises an unwanted point elimination section for applying an elimination process to the polygon data to generate new polygon data from which any unwanted set of coordinates is eliminated, and

said polygon division section generates the partial polygon data in accordance with the new polygon data which is obtained by said unwanted point elimination section.

Claim 3 **(Previously Presented)** The polygon rendering device according to claim 1, further comprising a concave polygon determination section for determining whether or not the polygon data specifies a concave polygon, wherein

said polygon division section generates the partial polygon data based on the polygon data which is determined as specifying the concave polygon by said polygon division section.

Claim 4 **(Previously Presented)** The polygon rendering device according to claim 1, wherein said partial polygon rendering section performs a perspective projection transformation process based on the partial polygon data generated by said polygon division section, and generates the image data which represents the image of the polygon viewed from a predetermined viewpoint.

Claim 5 **(Previously Presented)** The polygon rendering device according to claim 1, wherein

the polygon data includes n sets of vertex coordinates P1 to Pn of the polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division section

selects one of the vertex coordinates P1 to Pn of the polygon data as a reference vertex Pb (b=1, 2, ..., n), and in the forward direction, selects a vertex Pc positioned adjacent to the reference vertex Pb and a vertex P(c+1) positioned adjacent to the vertex Pc, and a triangle $\triangle$Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) carries, in and on, no other vertex Pi (i = 1, 2, ..., n, and $i \neq b$, $i \neq c$, $i \neq c+1$) belonging to the polygon and not yet selected, and an angle $\angle$Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) is smaller than 180 degrees,

selects, in addition to the reference vertex Pb and the vertex P(c+1), a vertex P(c+2) which is positioned adjacent to the vertex P(c+1) in the forward direction, and a triangle $\triangle$Pb P(c+1) P(c+2) formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) carries no other vertex Pj (j = 1, 2, ..., n, and $j \neq b$, $j \neq c$, $j \neq c+1$, $j \neq c+2$) which belongs to the polygon and not yet selected, and an angle $\angle$Pb P(c+1) P(c+2)

formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) is smaller than 180 degrees, and

generates the partial polygon data specifying at least the partial polygon formed by the reference vertex Pb, and the vertexes Pc, P(c+1), and P(c+2).

Claim 6 **(Previously Presented)** The polygon rendering device according to claim 5, wherein said polygon division section

sets, when the vertex P(c+2) selected thereby satisfies a condition that the triangle △Pb P(c+1) P(c+2) carries, in and on, no other vertex Pj, and the angle ∠Pb P(c+1) P(c+2) is smaller than 180 degrees, the vertex P(c+2) as the vertex P(c+1),

keeps selecting, until the condition is no longer satisfied, together with the reference vertex Pb and the newly-set vertex P(c+1), a new vertex P(c+2) which is positioned adjacent to the newly set vertex P(c+1), and

generates the partial polygon data which specifies the partial polygon formed by the reference vertex Pb, the vertexes Pc and P(C+1), and at least one of the vertexes P(c+2).

Claim 7 **(Currently Amended)** A polygon rendering method comprising:

a polygon division operation of dividing ~~generating~~, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of ~~a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing~~ the polygon; and

a partial polygon rendering operation of performing a rendering process and, ~~and based on the partial polygon data generated in said polygon division operation,~~ without requiring further division of any of the plurality of partial polygons, generating partial image data which represents an image of the at least one partial polygon from partial polygon data, wherein

~~each of the partial polygons includes a plurality of triangles which respectively include a vertex of the polygon, and~~

~~each of the triangles shares at least one edge with at least one other triangle included in the same partial polygon~~

a plurality of partial image data represents an image of the polygon when combined.

Claim 8 **(Previously Presented)** The polygon rendering method according to claim 7, wherein

the polygon data includes n sets of vertex coordinates P1 to Pn of the polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division operation

includes a first selection operation of selecting one of the vertex coordinates P1 to Pn of the polygon data as a reference vertex Pb (b=1, 2, ..., n), and in the forward direction, selecting a vertex Pc positioned adjacent to the reference vertex Pb and a vertex P(c+1) positioned adjacent to the vertex Pc, and a triangle △Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) carries, in and on, no other vertex Pi (i = 1, 2, ..., n, and i≠b, i≠c, i≠c+1) belonging to the polygon and not yet selected, and an angle ∠Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) is smaller than 180 degrees, and

includes a second selection operation of selecting, in addition to the reference vertex Pb and the vertex P(c+1), a vertex P(c+2) which is positioned adjacent to the vertex P(c+1) in the forward direction, and a triangle △Pb P(c+1) P(c+2) formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) carries no other vertex Pj (j = 1, 2, ..., n, and j≠b, j≠c, j≠c+1, j≠c+2) which belongs to the polygon and not yet selected, and an angle ∠Pb P(c+1) P(c+2) formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) is smaller than 180 degrees, and

said polygon division operation generates the partial polygon data specifying at least the partial polygon formed by the reference vertex Pb, and the vertexes Pc, and P(c+1) selected in said first selection operation, and the vertex P(c+2) selected in said second selection operation.

Claim 9 **(Previously Presented)** The polygon rendering method according to claim 8, wherein

said polygon division operation further includes a setting operation of setting the vertex P(c+2) to the vertex P(c+1) when the vertex P(c+2) selected in said second selection operation satisfies a condition that the triangle △Pb P(c+1) P(c+2) carries, in and on, no other vertex Pj, and the angle ∠Pb P(c+1) P(c+2) is smaller than 180 degrees,

said second selection operation keeps selecting, until the condition is no longer satisfied, together with the reference vertex Pb selected in said first selection operation, and the vertex P(c+1) newly set in said setting operation, a new vertex P(c+2) which is positioned adjacent to the newly-set vertex P(c+1), and

said polygon division operation generates the partial polygon data which specifies the partial polygon formed by the reference vertex Pb, and the vertexes Pc and P(C+1) selected in said first selection operation, and the vertex P(c+2) selected in said second selection operation.

Claim 10 **(Currently Amended)** A polygon rendering program operable to instruct a processor to render a polygon, the polygon rendering program comprising:

a polygon division operation of ~~generating~~ dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon ~~a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon~~; and

a partial polygon rendering operation of performing a rendering process and, ~~and based on the partial polygon data generated in said polygon division operation,~~ without requiring further division of any of the plurality of partial polygons, generating partial image data which represents an image of the at least one partial polygon from partial polygon data, wherein

~~each of the partial polygons includes a plurality of triangles which respectively include a vertex of the polygon, and~~

~~each of the triangles shares at least one edge with at least one other triangle included in the same partial polygon~~

a plurality of partial image data represents an image of the polygon when combined.

Claim 11 **(Previously Presented)** The polygon rendering program according to claim 10, wherein

the polygon data includes n sets of vertex coordinates P1 to Pn of the polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division operation

includes a first selection operation of selecting one of the vertex coordinates P1 to Pn of the polygon data as a reference vertex Pb (b=1, 2, ..., n), and in the forward direction, selecting a vertex Pc positioned adjacent to the reference vertex Pb and a vertex P(c+1) positioned adjacent to the vertex Pc, and a triangle $\triangle$Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) carries, in and on, no other vertex Pi (i = 1, 2, ..., n, and $i \neq b$, $i \neq c$, $i \neq c+1$) belonging to the polygon and not yet selected, and an angle $\angle$Pb Pc P(c+1) formed by the reference vertex Pb, and the vertexes Pc and P(c+1) is smaller than 180 degrees, and

includes a second selection operation of selecting, in addition to the reference vertex Pb and the vertex P(c+1), a vertex P(c+2) which is positioned adjacent to the vertex P(c+1) in the forward direction, and a triangle $\triangle$Pb P(c+1) P(c+2) formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) carries no other vertex Pj (j = 1, 2, ..., n, and $j \neq b$, $j \neq c$, $j \neq c+1$, $j \neq c+2$) which belongs to the polygon and not yet selected, and an angle $\angle$Pb P(c+1) P(c+2) formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) is smaller than 180 degrees, and

said polygon division operation generates the partial polygon data specifying at least the partial polygon formed by the reference vertex Pb, and the vertexes Pc, and P(c+1) selected in said first selection operation, and the vertex P(c+2) selected in said second selection operation.

Claim 12 **(Currently Amended)** The polygon rendering program according to claim 11 ~~10~~, wherein

said polygon division operation further includes a setting operation of setting the vertex P(c+2) to the vertex P(c+1) when the vertex P(c+2) selected in said second selection operation satisfies a condition that the triangle $\triangle$Pb P(c+1) P(c+2) carries, in and on, no other vertex Pj, and the angle $\angle$Pb P(c+1) P(c+2) is smaller than 180 degrees,

said second selection operation keeps selecting, until the condition is no longer satisfied, together with the reference vertex Pb selected in said first selection operation, and the vertex P(c+1) newly set in said second selection operation, a new vertex P(c+2) which is positioned adjacent to the newly set vertex P(c+1), and

said polygon division operation generates the partial polygon data which specifies the partial polygon formed by the reference vertex Pb, and the vertexes Pc and P(C+1) selected in said first selection operation, and the vertex P(c+2) selected in said second selection operation.

Claim 13 **(Previously Presented)** The polygon rendering program according to claim 10, wherein the polygon rendering program is recorded on a recording medium.